# The Commonwealth of Massachusetts

## DEPARTMENT OF PUBLIC UTILITIES

D.P.U. 13-182 December 23, 2013

Investigation by the Department of Public Utilities upon its own Motion into Electric Vehicles and Electric Vehicle Charging.

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VOTE AND ORDER OPENING INVESTIGATION

## I. INTRODUCTION AND PROCEDURAL HISTORY

On October 2, 2012, the Department of Public Utilities ("Department") issued a Notice of Investigation ("NOI") into the modernization of the electric grid. The Department's vision of the modern grid includes support for emerging technologies such as electric vehicles ("EVs"),[1] electric storage, energy saving devices, and other innovations that we have yet to imagine. Modernization of the Electric Grid, D.P.U. 12-76, at 3-4 (2013).[2] In the NOI at 3-4, 7, and 8, the Department proposed to examine, among other things, how to realize the benefits of distributed resources such as EVs. A stakeholder working group ("Working Group") was created to inform the Department's approach to grid modernization, including issues related to EVs.

On July 2, 2013, the Working Group submitted a report to the Department recommending that electric distribution companies file plans on grid modernization that increase distributed resources, including EVs. "Report to the Department of Public Utilities from the Steering Committee," D.P.U. 12-76 ("Report"), at 96-98. Working Group members who provided specific recommendations regarding EVs suggested that the Department should: (1) remove barriers to the development of an EV market and its charging infrastructure; and (2) facilitate the benefits of EVs while ensuring safe and reliable service for electric customers (Report at 96-98).

In addition to the process initiated by the Department, the Commonwealth is supporting EV implementation in numerous ways, in order to reduce greenhouse gas ("GHG") emissions in

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1 By "electric vehicles," we mean motor vehicles that are fueled by batteries and plug-in hybrid technology.

2 For more information and future updates, please refer to the Department's grid modernization webpage at: http://www.mass.gov/dpu/gridmodernization.

the transportation sector[3] and to stimulate growth in this portion of the clean energy sector. For instance, on September 30, 2013, the Executive Office of Energy and Environmental Affairs ("EOEEA") convened the Massachusetts Electric Vehicle Initiative ("MEVI") task force, which includes numerous public and private stakeholders. The MEVI task force's mission is to increase electric vehicles sales within the Commonwealth.[4] The Commonwealth has also signed an ambitious multi-state agreement to increase the number of clean energy vehicles on the road by 2025.[5]

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[3] The Global Warming Solutions Act ("GWSA"), codified as G.L. c. 21N, directs state agencies to promulgate regulations that reduce energy use, increase efficiency and encourage renewable sources of energy in energy generation, buildings and transportation in the Commonwealth and establishes limits on greenhouse gas ("GHG") emissions. G.L. c. 21N, §§ 3(a), (b), 6.

[4] On September 30, 2013, the MEVI task force held a kick-off meeting attended by representatives from the Department and the following state and local governments, businesses, and non-profit advocacy groups: the Massachusetts House of Representatives; EOEEA; the Massachusetts Department of Environmental Protection; the Massachusetts Department of Transportation; the City of Boston; the Town of Tyngsborough; Massachusetts Municipal Wholesale Electric Company; Northeast Utilities; National Grid USA; ChargePoint; RaskyBaerlein; Clipper Creek; Nuvera Fuel Cells, Inc.; Nissan USA; Toyota; Frito-Lay, Inc.; Clean Energy Center; New England Clean Energy Council; Conservation Law Foundation; Environment Northeast; and the Northeast States for Coordinated Air Use Management. More information about the MEVI task force is available at: http://www.mass.gov/eea/energy-utilities-clean-tech/alternative-transportation/mevi-home-page.html.

[5] Massachusetts has entered into a memorandum of understanding ("MOU") with California, Connecticut, Maryland, New York, Oregon, Rhode Island, and Vermont to get 3.3 million clean energy vehicles, including electric vehicles, operating in these states by 2025. The MOU is available at: http://www.mass.gov/eea/docs/dep/air/priorities/zev-mou-final.pdf.

## II. ELECTRIC VEHICLES IN MASSACHUSETTS

### A. Introduction

Like grid modernization, the widespread adoption of EVs will require adding new technologies to the electric grid while maintaining, and in some cases improving, the reliability and the safety of the grid. A large number of EVs in the Commonwealth will improve air quality, reduce GHG" emissions from transportation,[6] and could eventually provide electricity storage and balance system load.[7] The widespread adoption of EVs in the Commonwealth will require an increase in EV charging infrastructure, some of which will be for private use by residents and businesses and some of which will be available to the general public.[8] The availability of public EV charging will be especially important for EV drivers without private charging infrastructure, and for all EV drivers making medium- and long-distance vehicle trips.

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6 See Executive Office of Energy and Environmental Affairs, Massachusetts Clean Energy and Climate Plan for 2020: A report to the Great and General Court pursuant to the Global Warming Solutions Act at 51-52 (December 29, 2010), available at: http://www.mass.gov/eea/docs/eea/energy/2020-clean-energy-plan.pdf; The EV Project, Lessons Learned – The EV Project Greenhouse Gas (GHG) Avoidance and Cost Reduction, Prepared for the U.S. Department of Energy Award #DE-EE0002194 (July 2, 2012), available at: http://www.theevproject.com/cms-assets/documents/106077-891082.ghg.pdf.

7 F. Tuffner and M. Kinter-Meyer, Using Electric Vehicles to Meet Balancing Requirements Associated with Wind Power, Prepared for the U.S. Dep't of Energy under Contract DE-AC05-76RL01830, Pacific Northwest National Laboratory (July 2011), available at: http://energyenvironment.pnnl.gov/pdf/PNNL-20501_Renewables_Integration_Report_Final_7_8_2011.pdf.

8 Michael J. Kearney, Electric Vehicle Charging Infrastructure Deployment: Policy Analysis Using a Dynamic Behavioral Spatial Model (June 2011), available at: http://dspace.mit.edu/handle/1721.1/65504.

To explore these issues, the Department opens, on its own motion, an investigation into Department policies and regulations that will help facilitate and accommodate the widespread adoption of EVs. In this investigation, the Department seeks to resolve several questions about the provision, and our regulation, of electricity as a motor vehicle fuel. Also, we will investigate: (1) EV charging and its impact on the electric distribution system; (2) electric distribution company involvement in EV charging; (3) residential metering practices and rates for EVs; and (4) consumer protection issues.

B. Electric Vehicle Charging

An EV requires the use of electricity as a fuel. To become a reliable source of fuel, charging infrastructure must become widely available in homes, businesses, and public places. The Department has identified different categories of EV charging (e.g., public charging that is open to all EV drivers for a fee; private charging at residences and businesses; and semi-private charging for visitors to a store, parking garage, or other facility, whether for a fee or for free; charging at home for residents of multi-unit buildings, such as apartments and condominiums). EV charging, especially when provided to the public for a fee, raises questions about how the Department should classify this activity and its participants. Some other state public service commissions have disclaimed jurisdiction over certain types of EV charging, such as public EV charging.[9] Here, the Department will investigate whether and how the Department should regulate the different categories of EV charging.

[9] The New York Public Service Commission has disclaimed jurisdiction over publicly available EV charging stations by classifying such transactions as the sale of a charging service. See, e.g., New York Public Service Commission, Press Release: Electric Vehicle Charging Stations Encouraged (November 14, 2013), available at:

C. Electric Distribution Company Involvement in Electric Vehicle Charging

Other states have begun to address whether and how electric distribution companies may own and operate EV charging infrastructure.[10] While electric distribution companies could be effective owners and operators of charging infrastructure, they also could have an unfair advantage over competitors. The Department will investigate whether electric distribution companies may or should own and operate charging infrastructure and, if so, how this activity should be treated in their business operations.

D. Electric Vehicle Charging and the Electric Distribution System

The widespread adoption of EVs likely will place new and substantial demands on the electric distribution system.[11] Frequent or concentrated EV charging may impact individual

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http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={C312CD23-835D-49BD-8477-C07813950297}.

[10] See, e.g., Public Utility Commission of Oregon, Guidelines Adopted; Utilities Ordered to Make Revised Tariff Filings, Order No. 12-013 (January 19, 2012), available at: http://apps.puc.state.or.us/orders/2012ords/12-013.pdf; California Public Utility Commission, Phase 2 Decision Establishing Policies to Overcome Barriers To Electric Vehicle Deployment and Complying with Public Utilities Code Section 740.2, Rulemaking 09-08-009 (July 14, 2011), available at: http://docs.cpuc.ca.gov/PublishedDocs/WORD_PDF/FINAL_DECISION/139969.PDF; Energetics Incorporated, Compilation of Utility Commission Initiatives Related to Plug-in Electric Vehicles and Electric Vehicle Supply Equipment at 27-28 (April 2013), Prepared for New York State Energy Research and Development Authority, available at: http://www.nyserda.ny.gov/Publications/Research-and-Development-Technical-Reports/-/media/Files/Publications/Research/Transportation/13%2015%20Compilation%20of%20Utility%20Commission%20Initiatives%20Related%20to%20Plug%20acc.pdf.

[11] Stephen Schey, Don Scoffield, John Smart, A First Look at the Impact of Electric Vehicle Charging on the Electric Grid in The EV Project (May 2012), available at: http://www.theevproject.com/downloads/documents/46.%20A%20First%20Look%20at%20the%20Impact%20of%20Electric%20Vehicle%20Charging%20on%20the%20Electric%20Grid%20in%20The%20EV%20Project.pdf.

circuits and feeders and the system as a whole.[12] Accordingly, the Department will investigate how the electric distribution companies are accommodating and planning for widespread EV adoption and what, if any, notification requirements should be developed to track the increase of EVs on the distribution system.

E. Residential Metering and Rate Structures for Electric Vehicles

Ideally, EV charging should occur at off-peak times, when wholesale electricity prices are low and the system is under less stress. However, residential customers currently do not have metering capability or a rate structure that allows them to experience the time-varying nature of electricity costs, and thus they lack incentives to charge their vehicles during off-peak times. In this proceeding, we will investigate metering policies and rate structures that incentivize off-peak charging for residential customers with an EV.

F. Consumer Issues

Finally, the introduction of various EV charging policies, and especially those that involve EV charging for a fee, raises inevitable questions about the protection of consumers. As part of our jurisdictional inquiry, we will investigate our role in maintaining appropriate standards with regard to EV charging.

## III. REQUEST FOR COMMENTS

The Department welcomes comment in response to this NOI, and in particular, with regard to the following questions:

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[12] The EV Project, What Clustering Effects Have Been Seen by The EV Project?, Electric Transportation Engineering Corporation (August 2013), available at: http://www.theevproject.com/cms-assets/documents/126876-663065.clustering.pdf.

A. Electric Vehicle Charging

1. What role should the Department play in regulating EV charging?

2. As described above, the Department has identified different categories of EV charging (i.e., public, private, and semi-private). To what extent, if at all, can and should the Department regulate the categories of EV charging?

3. Could EV charging constitute an unregulated "charging service"?

4. Are there pricing or business models (e.g., a fixed fee) for EV charging that the Department cannot and should not regulate?

5. If the price for EV charging is determined by the volume of electricity provided, must the Department regulate it?

6. Would the presence of onsite renewable power generation affect the Department's jurisdiction over or ability to regulate an EV charging facility?

B. Electric Distribution Company Involvement in Electric Vehicle Charging

1. Should an electric distribution company be involved in EV charging equipment and facilities?

2. If so, what role should the electric distribution company play?

3. If so, how should this activity be treated with regard to the company's regulated operations? Should it be kept separate, as a part of its "non-utility" operations?

4. If so, what effect would that involvement have on potential competitors?

C. Electric Vehicle Charging and the Electric Distribution System

1. What short- and long-term benefits and risks do EVs and EV charging offer to the electric distribution system?

2. What strategies could electric distribution companies employ to minimize negative system impacts and maximize positive system impacts from widespread EV deployment on circuits and feeders, and on the electric distribution system as a whole?

3. What information should an electric distribution company have regarding EV charging, to plan and provide for reliable service? What are the best means for the utilities to obtain this information?

4. Are the existing applicable safety and reliability standards (i.e., per federal, state, and local authorities, as well as the electric distribution companies) sufficient to ensure the

safety and reliability of EV charging and its impact on the electric distribution system? If not, should the Department establish standards?

5. Are the electric distribution companies' policies on allocating costs for system upgrades a barrier to any categories of EV charging?

D. Residential Metering and Rate Structures for Electric Vehicles

1. Should the Department adopt metering policies regarding residential EV charging? If so, what should those policies be?

2. Should the Department establish a special rate for residential EV charging? If so, should the rate be mandatory or optional?

3. Can and should the Department establish rates and metering policies for semi-private and public EV charging facilities? If so, what rates and policies should the Department adopt?

E. Consumer Issues

1. Are applicable consumer protection laws and regulations adequate for EVs? If not, what issues should the Department address?

2. What types of EV customer data should electric distribution companies collect? What data should be shared with others, and how?

## IV. PUBLIC PARTICIPATION

The Department will accept initial written comments on EVs and EV charging no later than Friday, February 14, 2014, and reply comments will be due no later than Monday, March 17, 2014. Based on the comments, the Department will determine next steps. Written comments may not exceed 20 pages in length, double spaced.

Commenters must provide the Department with an electronic copy and a printed copy of their comments. The electronic copy must be submitted as either: (1) an attachment to an e-mail directed to: Mark.Marini@state.ma.us; DPU.efiling@state.ma.us; and mike.wallerstein@state.ma.us; or (2) a CD-ROM disk. The e-mail or the CD-ROM label must

specify: (1) the docket number of the proceeding (D.P.U. 13-182); (2) the name of the person or company submitting the filing; and (3) a brief descriptive title of the document. The electronic filing should also include the name, title, and phone number of a person to contact in the event of questions about the filing. Comments must be submitted in an electronic format compatible with Microsoft Word or with Adobe PDF. Data or spreadsheet responses must be submitted in an electronic format compatible with Microsoft Excel. Comments will be posted on the Department's website, under D.P.U. 13-182, at: www.mass.gov/dpu.

Printed copies of comments, and any CD-ROMs, shall be submitted by US Mail or by hand delivery to the Department of Public Utilities, One South Station, 5th Floor, Boston, Massachusetts, 02110. Copies of comments should be sent to: (1) Mark Marini, Secretary, Department of Public Utilities; and (2) Mike Wallerstein, Hearing Officer. Comments will be made available for public inspection at the Department's offices, One South Station, 5th Floor, Boston, Massachusetts, 02110, during normal business hours.

V. ORDER

Accordingly, the Department

VOTES: To open an investigation into electric vehicles and electric vehicle charging;

ORDERED: That the Secretary of the Department shall publish notice of this investigation in The Boston Globe and the Boston Herald, statewide papers of daily circulation within the Commonwealth.

By Order of the Department,

/s/
Ann G. Berwick, Chair

/s/
Jolette A. Westbrook, Commissioner

/s/
David W. Cash, Commissioner